Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A sensor for detecting an analyte in a fluid, wherein said sensor comprises a layer comprising conductive modified particles, wherein the layer comprising conductive modified particles has a preexisting resistance that is altered in the presence of the analyte, wherein said conductive modified particles comprise carbon products or colored pigments having at least one organic group covalently bonded to the particles,

wherein the sensor includes an electrical measuring apparatus electrically connected to the layer comprising conductive modified particles that detects an alteration in the preexisting resistance of the layer in the presence of the analyte.

2. (Original) An array of sensors for detecting an analyte in a fluid, wherein said array comprises two or more sensors for detecting an analyte in a fluid, wherein at least one of the sensors comprises the sensor of claim 1.

3. (Previously Presented) The sensor of claim 1, wherein said conductive modified particles comprise carbon products having at least one organic group directly attached to the particles.

4. (Previously Presented) The sensor of claim 1, wherein said conductive modified particles comprise carbon black having at least one organic group directly attached to the particles.

5. (Previously Presented) The sensor of claim 1, wherein said conductive modified particles comprise colored pigments having at least one organic group directly attached to the particles.

6. (Previously Presented) The sensor of claim 1, wherein said conductive modified particles comprise carbon aerogels having attached at least one organic group, pyrolized anion exchange resins having attached at least one organic group, a pyrolized

polymer resin having attached at least one organic group, mesoporous carbon microbeads having attached at least one organic group, pelleted carbon powder having attached at least one organic group, nanotubes having attached at least one organic group, buckyballs having attached at least one organic group, densified carbon black having attached at least one organic group, carbon clad materials having attached at least one organic group, or combinations thereof.

7. (Original) The sensor of claim 1, wherein said conductive modified particles comprise an aggregate comprising a carbon phase and a silicon-containing species phase, wherein said aggregate optionally has attached at least one organic group.

8. (Original) The sensor of claim 1, wherein said conductive modified particles comprise an aggregate comprising a carbon phase and a metal-containing species phase, wherein said aggregate optionally has attached at least one organic group.

9. (Original) The sensor of claim 1, wherein said conductive modified particles are at least a partially coated carbon black, optionally having attached at least one organic group.

10. (Original) The sensor of claim 1, wherein said conductive modified particles are particles having attached at least one organic group.

11. (Original) The sensor of claim 1, wherein said particles are pigments.

12. (Original) The sensor of claim 10, wherein said organic group comprises at least one aromatic group, at least one C_1-C_{100} alkyl group, or mixtures thereof.

13. (Original) The sensor of claim 10, wherein said organic group comprises a polymeric group.

14. (Original) The sensor of claim 10, wherein said organic group further comprises at least one ionic group, ionizable group, or both.

15. (Original) The sensor of claim 10, wherein said organic group comprises a polymer, an alkane, an alkene, an alkyne, a diene, an alicyclic hydrocarbon, an arene, a heterocyclic, an alcohol, an ether, a ketone, an aldehyde, a carbonyl, a carbanion, a polynuclear aromatic or a derivative of organic, functional group, a chiral group, a polyethylene glycol, a surfactant, a detergent, a biomolecule, a polysaccharide, a protein complex, a polypeptide, a dendrimeric material, an oligonucleotide, a fluorescent moiety, or radioactive group.

16. (Original) The sensor of claim 10, wherein said organic group comprises a 18-carbon alkyl group, a 4-carbon alkyl group, an alkyl ester, an oligoether, an anionic group, a poly(chloro-methylstyrene), or a poly(alkylacrylate).

17. (Original) The array of sensors according to claim 2, wherein each sensor provides a different response for the same analyte with a detector that is operatively associated with each sensor.

18. (Original) The array of sensors according to claim 2, wherein at least two sensors each comprise a layer comprising conductive modified particles, wherein the conductive modified particles for each sensor are different from each other.

19. (Currently Amended) A method for detecting the presence of an analyte in a fluid, said method comprising:

providing a sensor array comprising at least two sensors, wherein at least one sensor comprises a layer comprising conductive modified particles wherein the layer comprising conductive modified particles has a preexisting resistance that is altered in the presence of the analyte and wherein the at least one sensor includes an electrical measuring apparatus electrically connected to the layer comprising conductive modified particles that detects an alteration in the preexisting resistance of the layer in the presence of the analyte;

each sensor having an electrical path through the sensor;

contacting said sensor array with said analyte to generate a response; and

detecting said response with a detector that is operatively associated with each sensor, and thereby detecting the presence of said analyte, wherein said conductive modified particles

comprise carbon products or colored pigments having at least one organic group covalently bonded to the particles[[,]].

20. (Original) The method of claim 19, wherein said response is measured resistance through said electrical path.

21. (Original) The method of claim 19, wherein said method further comprises means to compare the response with a library of responses to match the response in order to determine the presence of said analyte or the concentration of said analyte.

22. (Previously Presented) An array of sensors for detecting an analyte in a fluid, said sensor array comprising:

a first and a second sensor electrically connected to an electrical measuring apparatus, wherein said first sensor comprises a region of nonconducting material and a region comprising conductive modified particles; and an electrical path through said region of nonconducting material and said region comprising conductive modified particles, wherein the region of nonconducting material and the region comprising conductive modified particles have a preexisting resistance that is altered in the presence of the analyte, wherein said conductive modified particles comprise carbon products or colored pigments having at least one organic group covalently bonded to the particles, aggregates comprising a carbon phase and a silicon-containing species phase and optionally having attached at least one organic group, aggregates comprising a carbon phase and metal-containing species phase optionally having attached at least one organic group, silica-coated carbon blacks, or combinations thereof and wherein the electrical measuring apparatus detects an alteration in the preexisting resistance in the presence of the analyte.

23. (Original) The array of sensors according to claim 22, wherein said second sensor is selected from a surface acoustic wave (SAW) sensor, a quartz microbalance, an organic semiconducting gas sensor, a bulk conducting polymer sensor, a polymeric coating on an optical fiber sensor, conducting/nonconducting regions sensor conducting filler in insulating polymer sensors, dye impregnated polymeric coating on an optical fiber, a polymer composite, a micro-electro-mechanical system device, a micromachined cantilever, or a micro-opto-electromechanical system device.

24. (Previously Presented) The array of sensors according to claim 22, wherein said conductive modified particles comprise carbon products having at least one organic group directly attached to the particles.

25. (Previously Presented) The array of sensors according to claim 22, wherein conductive modified particles comprise carbon black having at least one organic group directly attached to the particles.

26. (Previously Presented) The array of sensors according to claim 22, wherein said conductive modified particles comprise colored pigments having at least one organic group directly attached to the particles.

27. (Previously Presented) The array of sensors according to claim 22, wherein said conductive modified particles comprise carbon aerogels having attached at least one organic group, pyrolized anion exchange resins having attached at least one organic group, a pyrolized polymer resin having attached at least one organic group, mesoporous carbon microbeads having attached at least one organic group, pelleted carbon powder having attached at least one organic group, nanotubes having attached at least one organic group, buckyballs having attached at least one organic group, densified carbon black having attached at least one organic group, carbon clad materials having attached at least one organic group, or combinations thereof.

28. (Original) The array of sensors according to claim 22, wherein said conductive modified particles comprise an aggregate comprising a carbon phase and a silicon-containing species phase, wherein said aggregate optionally has attached at least one organic group.

29. (Original) The array of sensors according to claim 22, wherein said conductive modified particles comprise an aggregate comprising a carbon phase and a metal-containing species phase, wherein said aggregate optionally has attached at least one organic group.

30. (Original) The array of sensors according to claim 22, wherein said conductive modified particles are at least a partially coated carbon black, optionally having attached at least one organic group.

31. (Original) The array of sensors according to claim 22, wherein said conductive modified particles are particles having attached at least one organic group.

32. (Original) The array of sensors according to claim 31, wherein said particles are pigments.

33. (Original) The array of sensors according to claim 31, wherein said organic group comprises at least one aromatic group, at least one C_1-C_{100} alkyl group, or mixtures thereof.

34. (Original) The array of sensors according to claim 31, wherein said organic group comprises a polymeric group.

35. (Original) The array of sensors according to claim 31, wherein said organic group further comprises at least one ionic group, ionizable group, or both.

36. (Original) The array of sensors according to claim 31, wherein said organic group comprises a polymer, an alkane, an alkene, an alkyne, a diene, an alicyclic hydrocarbon, an arene, a heterocyclic, an alcohol, an ether, a ketone, an aldehyde, a carbonyl, a carbanion, a polynuclear aromatic or a derivative of organic, functional group, a chiral group, a polyethylene glycol, a surfactant, a detergent, a biomolecule, a polysaccharide, a protein complex, a polypeptide, a dendrimeric material, an oligonucleotide, a fluorescent moiety, or radioactive group.

37. (Original) The array of sensors according to claim 31, wherein said organic group comprises a 18-carbon alkyl group, a 4-carbon alkyl group, an alkyl ester, an oligoether, an anionic group, a poly(chloro-methylstyrene), or a poly(alkylacrylate).

38. (Previously Presented) A method for detecting the presence of an analyte in a fluid, said method comprising:

providing a sensor array comprising a first and a second sensor electrically connected to an electrical measuring apparatus, wherein said first sensor comprises a region of nonconducting material and a region comprising conductive modified particles; and an electrical path through said region of nonconducting material and said region comprising conductive modified particles wherein the region of nonconducting material and the region comprising conductive modified particles have a preexisting resistance that is altered in the presence of the analyte and wherein the electrical measuring apparatus detects an alteration in the preexisting resistance in the presence of the analyte;

contacting said sensor array with said analyte to generate a response;

detecting said response with a detector that is operatively associated with each sensor, and thereby detecting the presence of said analyte, wherein said conductive modified particles comprise carbon products or colored pigments having covalently bonded thereto at least one organic group, aggregates comprising a carbon phase and a silicon-containing species phase and optionally having attached at least one organic group, aggregates comprising a carbon phase and metal containing species phase optionally having attached at least one organic group, silica-coated carbon blacks, or combinations thereof.

39. (Previously Presented) The method according to claim 38, wherein said detector is optimized to detect an electromagnetic energy, optical properties, resistance, capacitance, inductance, impedance, strain, stress, or combinations thereof in said second sensor.

40. (Original) The method according to claim 38, wherein said second sensor is a surface acoustic wave (SAW) sensor, a quartz microbalance, an organic semiconducting gas sensor, a bulk conducting polymer sensor, a polymeric coating on an optical fiber sensor, a conducting/nonconducting region sensor or conducting filler in insulating polymer sensor, a dye impregnated polymeric coating on optical fibers, a polymer composite, a micro-electromechanical system device, a micromachined cantilever, or micro-opto-electro-mechanical system device.

41. (Canceled).

42. (Previously Presented) A sensor for detecting an analyte in a fluid, wherein said sensor comprises a layer comprising conductive modified particles, wherein the layer comprising conductive modified particles has a preexisting resistance that is altered in the presence of the analyte, wherein said conductive modified particles comprise carbon products or colored pigments having at least one organic group directly attached to the particles,

wherein the sensor includes an electrical measuring apparatus electrically connected to the layer comprising conductive modified particles that detects a change in the preexisting resistance of the layer in the presence of the analyte, and

wherein the change in the preexisting resistance is due to a change in the electrical properties across more than one of the conductive modified particles within the layer.

43. (Previously Presented) The sensor according to claim 42, wherein the at least one organic group is covalently attached to the particles.

44. (Previously Presented) The sensor according to claim 42, wherein the at least one organic group directly attached to the particles is of the chemical form $-X\text{-}Sp\text{-}[A]_p\text{-}R$ where X is attached to the particle and represents an aromatic or alkyl group, Sp is a spacer group, A is an alkylene oxide or polymer and R is a terminal group.

45. (Previously Presented) The sensor according to claim 1, wherein the at least one organic group directly attached to the particles is of the chemical form $-X\text{-}Sp\text{-}[A]_p\text{-}R$ where X is attached to the particle and represents an aromatic or alkyl group, Sp is a spacer group, A is an alkylene oxide or polymer and R is a terminal group.

46. (Previously Presented) The sensor according to claim 42, wherein each of the conductive modified particles is an aggregate comprising a carbon phase and a silicon-containing species phase having attached at least one organic group.

47. (Previously Presented) The sensor according to claim 1, wherein conductivity between the conductive modified particles within the layer changes due primarily to particle-to-particle distance changes between the conductive modified particles

within the layer when the analyte is introduced to the sensor, and wherein the preexisting resistance of the layer changes accordingly.

48. (Previously Presented) The sensor according to claim 1, wherein the organic group is selected from the group consisting of: $-C_6H_4-COO^-X^+$, $-C_6H_4-SO_3^-X^+$, $-C_6H_4-(PO_3)^{-2}2X^+$, $-C_6H_2-(COO^-X^+)_3$, $-C_6H_3-(COO^-X^+)_2$, $-(CH_2)_z-(COO^-X^+)$, $-C_6H_4-(CH_2)_z-(COO^-X^+)$, wherein X+ is a caton selected from the group consisting of Na^+, H^+, K^+, NH_4^+, Li^+, Ca_2^+, and Mg^+, and z is an integer between 1 and 18 inclusive.

49. (Previously Presented) The sensor according to claim 42, wherein the organic group is selected from the group consisting of: $-C_6H_4-COO^-X^+$, $-C_6H_4-SO_3^-X^+$, $-C_6H_4-(PO_3)^{-2}2X^+$, $-C_6H_2-(COO^-X^+)_3$, $-C_6H_3-(COO^-X^+)_2$, $-(CH_2)_z-(COO^-X^+)$, $-C_6H_4-(CH_2)_z-(COO^-X^+)$, wherein X+ is a caton selected from the group consisting of Na^+, H^+, K^+, NH_4^+, Li^+, Ca_2^+, and Mg^+, and z is an integer between 1 and 18 inclusive.

50. (Previously Presented) A method for detecting the presence of an analyte in a fluid, said method comprising:

providing a sensor array comprising at least two sensors, wherein at least one sensor comprises a layer comprising conductive modified particles wherein the layer comprising conductive modified particles has a preexisting resistance that is altered in the presence of the analyte and wherein the at least one sensor includes an electrical measuring apparatus electrically connected to the layer comprising conductive modified particles that detects an alteration in the preexisting resistance of the layer in the presence of the analyte;

each sensor having an electrical path through the sensor;

contacting said sensor array with said analyte to generate a response; and

detecting said response with a detector that is operatively associated with each sensor, and thereby detecting the presence of said analyte, wherein said conductive modified particles comprise carbon products or colored pigments having at least one organic group directly attached to the particles,

wherein the change in the preexisting resistance is due to a change in the electrical properties across more than one of the conductive modified particles within the layer.

51. (Previously Presented) The method according to claim 50, wherein the at least one organic group is covalently attached to the particles.

52. (Previously Presented) The method according to claim 50, wherein the at least one organic group directly attached to the particles is of the chemical form $-X\text{-}Sp\text{-}[A]_p\text{-}R$ where X is attached to the particle and represents an aromatic or alkyl group, Sp is a spacer group, A is an alkylene oxide or polymer and R is a terminal group.

53. (Previously Presented) The method according to claim 19, wherein the at least one organic group directly attached to the particles is of the chemical form $-X\text{-}Sp\text{-}[A]_p\text{-}R$ where X is attached to the particle and represents an aromatic or alkyl group, Sp is a spacer group, A is an alkylene oxide or polymer and R is a terminal group.

54. (Previously Presented) The method according to claim 50, wherein each of the conductive modified particles is an aggregate comprising a carbon phase and a silicon-containing species phase having attached at least one organic group.

55. (Previously Presented) The method according to claim 19, wherein conductivity between the conductive modified particles within the layer changes due primarily to particle-to-particle distance changes between the conductive modified particles within the layer when the analyte is introduced to the sensor, and wherein the preexisting resistance of the layer changes accordingly.

56. (Previously Presented) The method according to claim 19, wherein the organic group is selected from the group consisting of: $-C_6H_4\text{-}COO^-X^+$, $-C_6H_4\text{-}SO_3^-X^+$, $-C_6H_4\text{-}(PO_3)^{-2}2X^+$, $-C_6H_2\text{-}(COO^-X^+)_3$, $-C_6H_3\text{-}(COO^-X^+)_2$, $-(CH_2)_z\text{-}(COO^-X^+)$, $-C_6H_4\text{-}(CH_2)_z\text{-}(COO^-X^+)$, wherein X+ is a caton selected from the group consisting of Na^+, H^+, K^+, NH_4^+, Li^+, Ca_2^+, and Mg^+, and z is an integer between 1 and 18 inclusive.

57. (Previously Presented) The method according to claim 50, wherein the organic group is selected from the group consisting of: $-C_6H_4\text{-}COO^-X^+$, $-C_6H_4\text{-}SO3^-X^+$, $-C_6H_4\text{-}(PO3)^{-2}2X^+$, $-C_6H_2\text{-}(COO^-X^+)_3$, $-C_6H_3\text{-}(COO^-X^+)_2$, $-(CH_2)_z\text{-}(COO^-X^+)$, $-C_6H_4\text{-}(CH_2)_z\text{-}(COO^-X^+)$, wherein X+ is a caton selected from the group consisting of Na^+, H^+, K^+, NH_4^+, Li^+, Ca_2^+, and Mg^+, and z is an integer between 1 and 18 inclusive.

58. (New) The sensor according to claim 1, wherein the alteration in the preexisting resistance of the layer in the presence of the analyte is a result of swelling of the layer comprising conductive modified particles.

59. (New) The method according to claim 19, wherein the alteration in the preexisting resistance of the layer in the presence of the analyte is a result of swelling of the layer comprising conductive modified particles.

60. (New) The array of sensors according to claim 22, wherein the alteration in the preexisting resistance of the layer in the presence of the analyte is a result of swelling of the layer comprising conductive modified particles.

61. (New) The method according to claim 50, wherein the change in the preexisting resistance of the layer is due to a changed separation distance between adjacently-positioned ones of the conductive modified particles within the layer, caused by swelling of the layer.